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ART. I. STUDIES IN THE JACAMARS AND PUFF-BIRDS

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INTRODUCTION

A recent study of the Jacamars and Puff-birds in the collection of the Carnegie Museum shows that we have 787 specimens of the former group, representing 28 species and subspecies. Of the latter group there are 854 specimens, and 54 species and subspecies. Of the genera in the two families only *Jacamaralcyon* and *Hapaloptila* are wanting.

Certain species are in such large series that for the first time it has been possible to work out their geographical variants. In the present paper the taxonomy of these species is discussed, new locality-records and extensions of range are noted, and no less than eight forms which appear to be new are described and named. In specifying names of colors free use has been made of Ridgway's "Color Standards and Color Nomenclature." Measurements are in millimeters, and the length of the bill is that of the exposed culmen, except where otherwise stated.

THE RACES OF JACAMEROPS AUREA (MÜLLER).

The Giant Jacamar ranges in the Tropical Zone from Costa Rica south to Ecuador and the Amazon Valley in Brazil. Until 1922 no geographical variants were recognized, although Ridgway (Bulletin U. S. National Museum No. 50, part 6, 1914, 363) had remarked the peculiarities shown by specimens from certain regions. His series was much too small to justify the recognition of any subspecies, but some years later Bangs and Barbour ventured to discriminate the Central American bird under the name *penardi*. With an exceptionally fine series at my command, I can make out no less than four races of this species, one of which appears to be unnamed. The nominate race comes from Guiana. There prove to be two races in the Amazon Valley, and another in Central America and Colombia (west of the Andes). The characters upon which these several races rest are not absolutely stable, but they are perfectly obvious when series are compared, and sufficiently constant to permit the recognition of the races in question.

***Jacamerops aurea aurea* (Müller).**

Five specimens: Tamanoir and Pied Saut, French Guiana.

Ridgway (*l.c.*) refers to the blue crowns of his Guiana specimens, and this condition is a conspicuous feature in our specimens also. The upper-parts have more bronzy sheen than in *penardi*, and altogether the two respective races seem sufficiently well characterized—at least to be recognizable in series. The blue sheen of the crown extends to the throat as well. The distinctive characters are obvious in both sexes.

The species was originally described from Berbice, British Guiana, and I take our French Guiana specimens to represent it correctly. I have seen no specimens from Venezuela; Ridgway says that those he examined had little or no blue on the forehead.

***Jacamerops aurea ridgwayi*, subsp. nov.**

Twenty-nine specimens: Colonia do Mojuy, Villa Braga, Itaituba, Miritituba, Benevides, and Obidos, Brazil.

Type, No. 77,513, Collection Carnegie Museum, adult male; Miritituba, Rio Tapajóz, Brazil, March 19, 1920; Samuel M. Klages.

Subspecific characters.—Similar to *Jacamerops aurea aurea*, but upper-parts more extensively and more deeply purplish, and crown and throat more greenish, with less blue sheen.

Range.—The lower Amazon basin, west (on the north bank) to the Rio Negro and (on the south bank) to the Rio Tapajóz (and probably to the Rio Madeira).

Measurements (ten males).—Wing, 113-117 (average, 115); tail, 130-140 (135), bill, 49-54 (51.5).

Remarks.—Specimens from Obidos have somewhat bluer crowns, and thus tend toward true *aurea*. I take pleasure in naming this form in honor of Robert Ridgway, who led the way in the study of this species. While the form is clearly entitled to recognition, a search of the literature shows no name certainly applicable to it. Sclater (Monograph Jacamars and Puff-birds, 1879, 59) claims that the specimens of this species known to the older authors all came from the Guianas. Audebert and Vieillot (Oiseaux Dores, 1, Histoire Naturelle . . . Jacamars, etc., 1802, 8, pl. 6) state that the bird is called "Jacamaciri" by the Brazilians, but there is no evidence, in my opinion, that they were describing Brazilian specimens. The *Galbula jacamaciri* of Shaw (Naturalist's Miscellany, 20, 1819, pl. 833) was based in part on their figure.

***Jacamerops aurea isidori* Deville.**

Twenty-five specimens: Hyutanahan, Arimã, São Paulo de Olivença, Tonantins, Manacapurú, and Cavana (opposite Manacapurú), Brazil.

As a series these differ from the birds of the lower Amazon in the paler coloration of the underparts, which is obvious in both sexes, but is most marked in the female. In males of *ridgwayi* the underparts are amber brown, as against deep tawny in the present race. Females of the latter are cinnamon buff below, instead of raw sienna. The two Amazon races agree in the rich bronzy or even purplish color of the upperparts. The name *Jacamerops isidori* of Deville (Revue Zoologique, 1849, 55) was evidently based on an extreme variant of this type, to judge from the colored plate in Des Murs (Castelnau Expedition, Zoologie, Oiseaux, 1855, pl. 10) and from Sclater's remarks on his examination of the type (Monograph Jacamars and Puff-birds, 1879, 60). Since this type-specimen came from eastern Peru, the name doubtless applies as well to the population of the upper and middle Amazon and the Rio Purús. Birds from these several regions agree *inter se*. They average slightly smaller than *ridgwayi*. Ten males measure: wing, 111-117 (average, 113.5); tail, 120-138 (129.5); bill, 48-53 (50.5).

***Jacamerops aurea penardi* Bangs and Barbour.**

Seven specimens: Cuabre and El Hogar, Costa Rica; El Tambor and Murindó, Colombia.

The describers based their name on four specimens, which they compared with a pair from Surinam and a female from the Brazilian "Amazons." The only diagnostic character they gave was the "much more slender bill," which character, although obvious upon comparison, is not well marked, and might well be disregarded in any study of this species. However, there are other differences of more account. Costa Rican birds have greener crowns than do those from French Guiana (typical or true *aurea*); the lower back, upper tail-coverts, wing-coverts, and inner secondaries are also purer green, with less bronzy suffusion. In all these respects our Colombian specimens agree with those from Costa Rica, and I refer them likewise to *penardi*. There are a few odd published records from Colombia, but this species must be rare there, as Chapman does not list it.

THE RACES OF *UROGALBA DEA* (Linnæus).

This species was long known as *Urogalba paradisea*, but the specific name *dea* is the one used in the tenth edition of Linnæus' "Systema Naturæ." Surinam is the type-locality, and there has never been any question as to the proper application of this name. The trouble started in 1855, when Sclater described his *Urogalba amazonum* from a specimen whose origin was questionable. Since that date various authors, including Sclater himself, and down to Griscom and Greenway (Bulletin Museum Comparative Zoölogy, 88, 1941, 186), have discussed the case and reached diverse conclusions. This confusion was due to the lack of sufficient material for study and comparison. The superb series of this species secured by Mr. Klages in various parts of its range now makes possible a study of geographical variation. From this study it appears that while *Urogalba dea dea* has constant characters and a definite range, at least three different races have been confused under the name *amazonum*. True *amazonum*, as I shall endeavor to show, is confined to the region south of the Amazon and east of the Rio Tapajóz. West of that stream, and thence to the Rio Madeira, it is replaced by a form which in its uniform pileum resembles typical *dea* but differs therefrom in proportions and in certain details of coloration. Oddly enough, it is this same form, or one practically indistinguishable, that ranges on the north bank of the Amazon from the Rio Negro west to Peru. And finally, on the south bank of the Amazon, west of the Rio Madeira, lives a small, short-tailed, brightly colored race with a parti-colored pileum. Let us consider these races separately.

Urogalba dea dea (Linnæus).

Forty specimens: Tamanoir and Pied Saut, French Guiana; Upper Arucauá and Obidos, Brazil.

This, the typical race, is characterized by its relatively long tail, its dark general coloration, bluish (rather than greenish) upper tail-coverts and tail, more bluish wings with less bronzy sheen, greater extent of chin-spot, and darker-colored and uniform pileum. Only one specimen in the series shows any trace of pale superciliaries. Obidos skins are precisely like those from French Guiana. This form ranges from the Guianas and upper Orinoco to the Amazon, and west to the Rio Negro (von Pelzeln). Hellmayr (Novitates Zoologicae, 14, 1907, 27) says that Natterer's specimens from Manaus and the upper Rio Negro agree in all respects with typical *dea*.

Urogalba dea amazonum¹ Sclater.

Twenty-eight specimens: Benevides, Colonia do Mojuy, Bella Vista, Miritituba, and Aveiros, Brazil.

In addition to these I have examined six specimens from the collection of the American Museum: Magoary (Marajó Island), Mocajuba (Rio Tocantins), Tauary (Rio Tapajóz), Caxiricatuba (Rio Tapajóz), and Porto de Moz (Rio Xingú), Brazil.

As shown by the series at hand, this form differs from typical *dea* in relative proportions: slightly longer wing, obviously shorter tail, and longer bill. It differs also in coloration: smaller brown chin-spot, greenish or bronzy (rather than bluish) tertiaries, upper tail-coverts, and tail; and in particular in the color of the pileum, which is light brown, with the tips of the feathers broadly brownish white. In some specimens the whole pileum is thus light colored; in others only the superciliaries are so marked. A specimen from the Rio Xingú closely resembles true *dea* in color, but by its measurements it must belong to *amazonum*.

In describing this form Sclater had but one specimen, purchased from a dealer, and without exact locality, but supposed to be from the "lower Amazon." Later, however (Monograph Jacamars and Puff-birds, 1879, 6), he came to consider this allocation an error, and accordingly substituted therefor "upper Amazonia" instead. To such absurd futilities were the ornithologists of that day reduced by their dependence on unscientifically collected material! Since birds from the lower and the upper Amazon respectively are recognizably distinct from each other, the origin of Sclater's type becomes important to discover. The specimen itself, now in the British Museum, would be desirable for comparison, but it is at present unavailable. Sclater's figure in his "Monograph" is not sufficiently definitive, but fortunately his measurements supply the necessary clue. They show that his type-specimen could have belonged only to the form which ranges south of the Amazon from the Pará district west to the Rio Tapajóz. The races from the upper Amazon are differently proportioned; their tails in particular are shorter. Hellmayr (*l.c.*) has arrived at precisely the same conclusion as regards the application of the name *amazonum*. I have before me the two specimens from the island of Marajó which he compared with the type. The westward range of this race is sharply limited by the Rio Tapajóz, as is that of so many other

¹ I accept this form of the word as the genitive plural.

birds; west of this stream the species is represented by another and different race, which I propose to call

***Urogalba dea brunneiceps*, subsp. nov.**

Thirty-three specimens: Villa Braga, Itaituba, Apacy, Tonantins, Manacapurú, Caviana, and Rio Manacapurú, Brazil.

Type, No. 98,508, Collection Carnegie Museum, adult "female" (= male?); Manacapurú, Rio Solimoës, Brazil, October 15, 1923; Samuel M. Klages.

Subspecific characters.—Similar to *Urogalba dea dea*, but differently proportioned (wing longer, tail shorter; bill longer), and coloration somewhat different; pileum averaging paler brown, uniform or sometimes with indistinct paler superciliaries; wing-coverts with more bronzy or greenish gloss; brown chin-spot averaging less extensive; and upperparts in general with the sheen more greenish, less bluish.

Range.—North bank of the Amazon, from the Rio Negro west to Peru, and on the south bank between the Rio Madeira and the Rio Tapajóz.

Remarks.—Numerous cases are known of birds from both banks of the Amazon being identical with each other, but it is indeed remarkable to find a characteristic north-bank form invading the south bank over a limited area, on either side of which it is represented by other races. No other such anomalous case comes to mind. However, close examination shows that birds from south of the great river are an incipient subspecies, since they tend to have the brown chin-spot smaller. Griscom and Greenway (Bulletin Museum Comparative Zoölogy, 88, 1941, 186) apparently did not detect the obvious differences between specimens from the right and left banks of the Rio Tapajóz, and listed them all as *amazonum*. However, there are three specimens from the left bank which show more or less decided pale superciliaries, as in that form; I consider them individual variants.

***Urogalba dea phainopepla*, subsp. nov.**

Fourteen specimens: Hyutanahan, Nova Olinda, Arimã, and São Paulo de Olivença, Brazil.

Type, No. 92,645, Collection Carnegie Museum, adult male; Arimã, Rio Purús, Brazil, September 5, 1922; Samuel M. Klages.

Subspecific characters.—Similar to *Urogalba dea amazonum* of the lower Amazon (Pará district), but decidedly smaller, and general coloration brighter, with the tail and its upper coverts usually more decidedly

greenish; wing-coverts and tertiaries more strongly washed with bronzy.

Range.—Brazil south of the Amazon and west of the Rio Madeira, and thence to Bolivia (Porto Velho, *fide* Cory).

Specimens from São Paulo de Olivença are not typical but in their darker and more uniformly colored pileums tend more or less toward *brunneiceps*. These two forms probably inosculate completely in Peru, but in Brazil they are certainly sufficiently distinct. The small size of this form in general, and its short tail in particular, as well as its obviously brighter coloration, are marked features when series are compared. It is certainly odd to find the two forms of this species with light-colored pileums, *amazonum* and *phainopepla*, separated in their respective ranges by a form in which the pileum is dark-colored and uniform.

MEASUREMENTS

Only fully adult birds in fresh plumage have been used in taking measurements. The tail-length naturally varies somewhat according to wear. The bill has been measured from the gape, to accord with Sclater's method. Unless otherwise specified, averages are based on a series of ten specimens.

Specimens	Wing	Tail	Bill
<i>Urogalba dea dea</i> :—			
Males.....	(87-92)89.8	(158-188)168	(58-68)61.3
Females.....	(85-89)87	(145-161)155	(49-61)55
<i>Urogalba dea amazonum</i> :—			
Males.....	(91-96)93	(150-174)160	(63-68)65.5
Type-specimen (<i>fide</i> Hellmayr).....	96	164	68.5
Females (7).....	(89-95)93.—	(140-153)147.5	(56-63)58.7
<i>Urogalba dea brunneiceps</i> :—			
Males.....	(87-95)92.6	(140-160)146.7	(63-70)66.6
Females.....	(87-94)89.8	(130-151)137.4	(56-63)60.1
<i>Urogalba dea phainopepla</i> :—			
Males (8).....	(88-93)90.6	(127-144)137.5	(56-65)60
Females (6).....	(85-91)88	(125-141)132.4	(56-60)58

THE GALBULA TOMBACEA GROUP.

The latest study of *Galbula tombacea* is by Hellmayr (Novitates Zoologicae, 17, 1910, 389, and Archiv für Naturgeschichte, 85, A, 1919, 118). He recognizes two races, *tombacea* proper and *cyanescens*. He attempts to restrict the latter to the south bank of the Amazon and assigns true *tombacea* to the north bank, and thence to Bogotá, Colombia. But the

matter of the respective ranges of the two forms and their taxonomy is not so simple as he supposes. With an ample series available for study, I wish to place my conclusions on record.

Galbula tombacea was described by Spix (Aves Brasiliae, 1, 1824, 55, pl. 58) from an unspecified locality on the Amazon River. We have five specimens from São Paulo de Olivença, ten from Panelas Island (near Tonantins), and four from a point opposite Tonantins. Note that they all come from the *south* bank of the river. It is nevertheless fair to presume that they represent Spix's bird correctly, and since he is known to have collected at São Paulo de Olivença, I suggest this as the type-locality for the species. Our birds compare favorably with specimens from eastern Ecuador (American Museum), but those in our collection average more coppery bronze above (the Tonantins skins especially); in this respect they therefore approach the birds about to be described from the middle Amazon, but the white chin-spot is not so well developed. The present species ranges west into Ecuador and Peru, the records from which countries Hellmayr has duly verified and summarized.

Galbula cyanescens was described by Deville (Revue et Magasin de Zoologie, (2), 1, 1849, 56) from "les bords de l'Amazone"; Hellmayr tells us that the types in the Paris Museum came from Sarayaçu, on the Ucayali River in northeastern Peru (a locality not to be confused with the Sarayaçu in eastern Ecuador). He lists specimens from seven other localities in central and southeastern Peru, among them Nauta, which is not only on the north bank of the Amazon but is also only fifty miles distant from Iquitos, where *G. tombacea* is known to occur. This circumstance, taken in connection with the fact that farther down the river *tombacea* crosses to the south bank, goes far to suggest that we are dealing here not with representative subspecies, as has been supposed, but with two distinct specific types, whose ranges appear to inosculate if not to overlap.

Our series of forty specimens of *cyanescens* come from the Rio Purús (Hyutanahan, Nova Olinda, and Arimã). This form is constantly larger than *tombacea*; it differs in its glossy pileum and virtual lack of a chin-spot. There is not any suggestion of actual intergradation between the two forms. Variation affects the amount of coppery sheen on the upperparts, and also the color of the crown, which in some individuals is greenish, in others more bluish. The case for specific status of *tombacea* and *cyanescens* is strengthened by analogy when we consider that there is a third member of this compact group, *Galbula pastazæ* Taczanowski and von Berlepsch,

closely allied but clearly specifically distinct. We have one specimen of this form from Arimã on the Rio Purús. Chapman (Bulletin American Museum Natural History, 55, 1926, 352) calls it a Subtropical Zone form, but this specimen does not confirm this allocation.

Specimens of *tombacea* from eastern Colombia (five skins from the American Museum) are by comparison with Ecuador examples more purely green, less bronzy, above; if this character is borne out by a larger series, they would be entitled to stand as a subspecies, for which Sclater's name *fuscicapilla* (1855) would be available. The bird of the middle Amazon too appears to be entitled to formal recognition, and I call it

***Galbula tombacea mentalis*, subsp. nov.**

Five specimens: Caviana and Rio Manacapurú, Brazil.

Type, No. 98,990, Collection Carnegie Museum, adult male; Caviana (opposite Manacapurú), Rio Solimões, Brazil, January 16, 1924; Samuel M. Klages.

Subspecific characters.—Similar to *G. tombacea tombacea* of the upper Amazon, but upperparts more heavily glossed with coppery bronze; posterior half of crown glossed with bluish green (more strongly in the male); and white chin-spot larger.

Range.—Middle Amazon Valley (both banks), west of the Rio Negro and Rio Madeira.

Remarks.—Although at first glance the characters of this race would suggest that it is a form intermediate between *tombacea* and *cyanescens*, I do not so consider it. I believe that its affinities are wholly with the former. From Hellmayr's remarks (Novitates Zoologicae, 17, 1910, 390) I infer that it is this form that occurs at Humaythá, on the Rio Madeira. The present records involve a considerable eastward extension in the known range of *G. tombacea*.

NOTE ON *GALBULA LEUCOGASTRIS* VIEILLOT.

"Cayenne" is the type-locality of this species, as designated by Hellmayr (Novitates Zoologicae, 17, 1910, 390). We have seventeen specimens from the following localities: Tamanoir, French Guiana; Upper Arucauá, Villa Braga, Miritituba, Nova Olinda, and Arimã, Brazil. Although it is claimed to be "distinct at a glance," I am unable satisfactorily to distinguish Griscom and Greenway's *viridissima* (Bulletin Museum Comparative Zoölogy, 88, 1937, 426). So far as I can see our three birds from the Rio Tapajóz are precisely like the others. There is no difference

in color, and the variation in the length of the tail overtops the stated differences in this respect between the two supposed forms. However, I note that not one of our specimens is as green as Sclater's figure (Monograph Jacamars and Puff-birds, 1880, pl. 9) represents. This plate was based on specimens from the Rio Negro. Further investigation of this case is needful. On the claim that *G. leucogastris* and *G. chalcothorax* intergrade I can express no opinion.

ON BRACHYGALBA GOERINGI SCLATER AND SALVIN.

Of this little-known species we have fifty-one specimens from El Trompillo, Carabobo, Venezuela, and twelve from Palmar, Boyaca, Colombia. The Venezuelan skins are virtual topotypes, but on comparing them with the original description and plate (Proceedings Zoological Society of London, 1869, 253, pl. 18) I find several discrepancies. There is absolutely no difference—not even an average one—between the sexes, both of which possess a broad, well-marked rusty band across the middle of the abdomen. However, the plate represents the male bird as having the abdomen pure white. The color of the upperparts is not “bronzy green,” but steel blue, although the feathers are more greenish subterminally, and brown basally. The pectoral collar and the sides of the body are brown, not blackish; there is no indication of a pale superciliary stripe in adult birds, nor is the nape fulvous, but instead merely a little paler than the crown. In a young bird with a short bill (No. 47,421, May 27), however, the nape, superciliaries, and sides of the head are fulvous-tinged; the back, wings, and tail are greenish, with each feather margined and tipped with ferruginous; and the dark-colored pectoral collar and sides are broken by whitish or buffy feather-tipping. Several other longer-billed specimens show similar indications of immaturity. It is quite possible that Goering's specimens were not fully adult.

I am unable to distinguish our series from Palmar (in the Tropical Zone east of the Eastern Andes) from Venezuelan birds (*cf.* Underdown, Auk, 46, 1929, 240). This record involves a great extension of the known range.

A NEW BRACHYGALBA FROM BRAZIL.

***Brachygalba phæonota*, sp. nov.**

Type (and only specimen), No. 96,979, Collection Carnegie Museum, adult female; Tonantins, Rio Solimoës, Brazil, June 28, 1923; Samuel M. Klages.

Description.—Upperparts dark brown (bister), the pileum a little paler (sepia); wings and tail black with a faint steel blue gloss, the former with a narrow white band underneath, at the base of the remiges; throat, breast, sides, and under tail-coverts dark brown like the upperparts, leaving only the middle of the abdomen soiled white; feathers of the chin and upper throat with faint whitish shaft-stripes and rufescent tips; "iris milky white; feet blackish; bill black." Wing, 71; tail, 53; exposed culmen, 43.

Range.—Certainly known only from the type-locality.

Remarks.—This species resembles *B. lugubris* (Swainson), described from British Guiana, and of which we possess authentic specimens from eastern Venezuela, close to the Guiana frontier. It differs from that species in its uniformly darker (more brownish, less rufescent) coloration, in its lack of any white over the eye, and in its dark-colored throat, with just the faintest possible suggestion of a pale submaxillary line on either side. The *Galbula inornata* of Sclater (Jardine's Contributions to Ornithology, 1852, 32) was later synonymized with *lugubris* by Sclater himself. Like so many of the species described in the early days, its exact home was unknown, but was surmised to be the upper Amazon Valley. The original description leaves much to be desired, but the figure in Sclater's Monograph (pl. 11, right-hand figure) seems to have been based on the type-specimen of *inornata*—the only one in his collection without definite locality. This figure is a perfect likeness of *B. lugubris* as represented by our Venezuelan specimens, but it does not answer at all for the Tonantins bird. Taczanowski (Ornithologie du Pérou, 3, 1886, 120) also describes a Peruvian specimen which he calls *inornata*, but again the description seems to indicate a bird with earthy brown upperparts and a distinct superciliary stripe. I think the Tonantins bird must be new, but more specimens are naturally desirable.

CRITICAL REMARKS ON *NOTHARCHUS HYPERRHYNCHUS*.

Since discussing this species some years ago (Annals Carnegie Museum, 14, 1922, 229), I have re-examined the case in the light of new material and new developments. The receipt of a series from the Amazon Valley has been the occasion for taking up the question again. Birds from the lower Amazon have been discriminated by Sassi under the name *paraensis* (Ornithologische Monatsberichte, 40, 1922, 121). In this form the maximum in size of bill is reached for this species. It was described from the Pará region, and reaches its western limit at the Rio Tapajóz, beyond

which it is replaced by typical *hyperrhynchus*. We have specimens from Santarem and Colonia do Mojuy.

From the middle and upper Amazon, west of the Rio Negro and the Rio Tapajóz, we have five specimens of *hyperrhynchus*. The only difference that I can find between Amazonian and Costa Rican skins is that the latter have slightly more dark mottling on the white breast and sides of the head than do the former. Also, the white band on the forehead averages narrower, but since this is affected by the makeup of the skin, its value as a differential character is lessened. Bolivian birds (seven specimens) are the same, too, except that the white parts are faintly buffy, but I think this is an adventitious stain. We have five birds from the Santa Marta region and two from Jaraquiel, Colombia. On closer examination I find that all these have brownish wings, which I ascribe to immaturity. Their breast-bands are on an average narrower, and if this feature is not due solely to the compressed makeup of the skins and is found to hold in fully adult individuals, it might suffice to set off the birds of the Colombian Caribbean littoral as a recognizable race. But as matters stand now, I shall have to call them *hyperrhynchus*, like the rest. Chapman (Bulletin American Museum of Natural History, 55, 1926, 354) has reached the same conclusion as to the application of the name. And now comes Van Rossem (Transactions San Diego Society of Natural History, 8, 1934, 3-4), declaring that he can make out no variation within the Central American range of *dysoni*. If he is correct, this name will have to go. This opinion was to some extent foreshadowed by Sclater (Monograph Jacamars and Puff-birds, 1880, 67-72), who remarked on the several supposed forms occurring together.²

Ridgway (Bulletin U. S. National Museum No. 50, part 6, 1914, 375) was able to distinguish *dysoni* from *hyperrhynchus* only by the larger bill of the latter, but it is significant that he made his comparisons with specimens of *paraensis* and not with typical *hyperrhynchus*.

So far as I can discover, this species has not been recorded hitherto from Bolivia. Our specimens from that country come from Buena Vista, near Santa Cruz de la Sierra. We also have a single specimen (No. 90,915) from Guachi, Zulia, Venezuela, that may represent a recognizable form from the Maracaibo Basin. It is apparently adult but has considerable dark mottling and streaking on the breast and the sides of the head; the breast-band is comparatively narrow.

² Since the above was written I find that Sassi (Temminckia, 4, 1939, 161-162) has independently reached the same conclusion.

I consider *Notharchus macrorhynchos* of Guiana a closely allied but distinct species.

THE RACES OF *NYSTACTES TAMATIA* (GMELIN).

Nystactes tamatia, like many other sedentary species of the Brazilian forest region, varies geographically, and the Amazon and its larger affluents tend to limit the respective ranges of its component races. For a long time only two races were recognized: true *tamatia* of the Guianas and the lower Amazon and *pulmentum* of the upper Amazon. In 1910, Hellmayr (Novitates Zoologicae, 17, 1910, 391-2) pointed out the existence of a third race, *hypnaleus* of Cabanis and Heine, in the Pará district, and in 1921, Cherrie and Reichenberger (American Museum Novitates No. 27, 1921, 3) described a fourth, *interior*, from Matto Grosso. The last I have not seen, but with the material before me I have no trouble in discriminating the other three races; and there are two more which appear to be worthy of recognition by name. Typical *tamatia* is the most lightly spotted below of all the forms; in depth of color of the throat and breast it is intermediate between *hypnaleus* and *pulmentum*. Cayenne is the type-locality; and while we have no specimens from there, I assume that our Obidos skins (three) are typical, as do also Griscom and Greenway (Bulletin Museum Comparative Zoölogy, 88, 1941, 190). However, these authors avoid the determination of the specimens from the west bank of the Rio Tapajóz. (Incidentally, they list three specimens from Villa Braga by mistake, since we have only one from that place, and two from Apacy.) I am unable to differentiate these Rio Tapajóz birds from those from Obidos. The alleged difference in the length and shape of the bill fails to materialize upon measurement. It appears, therefore, that *tamatia* proper crosses the Amazon to occupy the territory between the Rio Tapajóz and the Rio Madeira. East and west of this zone, however, the species is represented by races whose respective ranges are separated by the Amazon. I have examined four specimens of *tamatia* from Borba, on the lower Rio Madeira, in the collection of the American Museum, also four from Santa Clara, Villa Bella Imperatriz, on the south bank of the Amazon.

In *Nystactes tamatia hypnaleus* of Cabanis and Heine (twenty-five specimens examined) the spotting of the underparts is denser, and the throat and breast are more ochraceous, than in the typical race. In *pulmentum* (nine specimens from the Rio Purús and Tonantins, on the Rio Solimoës) the spotting below is likewise fairly heavy, but the throat

and breast are much paler, these parts being merely washed with buff. A series of eleven specimens from Caviana, on the south bank of the Amazon opposite Manacapurú, however, appear to be separable from *pulmentum*, and I call them

***Nystactes tamatia punctuliger*, subsp. nov.**

Type, No. 99,068, Collection Carnegie Museum, adult male; Caviana, Rio Solimoës, Brazil, January 22, 1924; Samuel M. Klages.

Subspecific characters.—Similar to *Nystactes tamatia pulmentum*, but underparts more heavily and densely spotted, and upperparts slightly but constantly darker brown.

Range.—Known only from the type-locality.

Remarks.—The exact limits of the range of this new race remain to be worked out. It is likely that the Rio Madeira cuts it off from *tamatia* proper, while to the west it doubtless intergrades with *pulmentum* on the Rio Purús. On the opposite (north) bank of the Amazon it is represented by a closely allied but apparently distinct race,

***Nystactes tamatia inexpectatus*, subsp. nov.**

Type, No. 99,562, Collection Carnegie Museum, adult male; Manacapurú, Rio Solimoës, Brazil, June 13, 1924; Samuel M. Klages.

Subspecific characters.—Similar to *Nystactes tamatia punctuliger* nobis, but throat and breast more deeply colored, ochraceous buff instead of buffy white.

Range.—Known only from the type-locality.

Remarks.—In this race, which hails from the north bank of the Amazon, west of the Rio Negro for an unknown distance, the underparts are as heavily and densely spotted as in the birds from the south bank; but the throat is much deeper ochraceous—exactly as in typical *tamatia*—and the upperparts are deep brown. One of our two males is a young bird in moulting plumage, but the other is an adult whose characters give it distinction.

NOTE ON NYSTALUS STRIATPECTUS (SCLATER).

It has become the fashion to submerge this form as a subspecies under *maculatus*. Although their close relationship may be admitted, there is as yet no satisfactory proof of intergradation. The form *pallidigula* of Cherrie and Reichenberger (American Museum Novitates No. 58, 1923, 6), if valid, clearly belongs with *striatpectus*, but *parvirostris* of Hellmayr

(Novitates Zoologicae, 15, 1908, 86) is just as clearly a race of *maculatus*. The describers of *pallidigula* say that their bird from Matto Grosso is "much smaller, the bill especially being weaker" than in *striatipectus*, but their measurements (based in part upon our material, twenty-nine specimens in all from Bolivia and Argentina) fail to bear this out, so that the only diagnostic character is the different coloration.

A NEW MALACOPTILA FROM COLOMBIA.

Malacoptila panamensis magdalenæ, subsp. nov.

Type, No. 58,908, Collection Carnegie Museum, adult female; El Tambor, Santander, Colombia, December 5, 1916; M. A. Carriker, Jr.

Subspecific characters.—Similar to *Malacoptila panamensis panamensis* (as represented by specimens from the lower Atrato River and southwestern Costa Rica), but the coloration of the underparts is much lighter; the dark streaks on the lower breast are not so heavy, and are dusky rather than brownish in tone. Wing (type), 91; tail, 75; bill, 25; tarsus, 16.

Range.—Magdalena Valley in Colombia (exact limits not known).

Remarks.—It has been supposed that in Colombia *Malacoptila panamensis* was confined to the Pacific coast region, whence it extended into Panama. But the acquisition of the present series of six specimens shows that its range must include the Magdalena Valley as well. Consequently it is no surprise to find that the population of this region constitutes an undescribed race, easily recognizable by its extensively white underparts in both sexes, with a corresponding reduction in the dark streaking of the lower breast and the sides of the body. The throat and upper breast are tawny buff, in contrast to the rest of the underparts; by this token the new form differs from *fuliginosa* of eastern Costa Rica and resembles true *panamensis*. In the color of the upperparts it also resembles the latter form.

M. panamensis must now be added to the list of species inhabiting alike the Tropical Zone of both the Magdalena Valley and the Pacific coast region of Colombia. I cannot agree with Bangs (Auk, 24, 1907, 294) that this species has a gray and a rufous phase independent of age, sex, or season. Certainly this statement is not borne out by the series at hand (all the forms taken collectively). The males are rufous, the females gray, just as Ridgway describes them. In the few cases where the plumage disagrees with the sex-mark, there is reason to believe that the latter is a mistake. Incidentally, females tend to be larger, not smaller, than males.

NOTE ON MALACOPTILA ASPERSA SCLATER.

With a single specimen before them from Las Quiguas, northern Venezuela, Hellmayr and von Seilern (Archiv für Naturgeschichte, 78, A, 1912, 156) unhesitatingly identify it with the *Malacoptila aspersa* of Sclater, which was somewhat doubtfully ascribed to Venezuela, but was later repudiated by Sclater himself. Oddly enough, they allow it specific rank on the basis of the characters shown by their specimen. It so happens that we have four specimens (one male, three females) from Las Quiguas, but these do not show any special peculiarities as compared with Colombian skins of *M. mystacalis*. Now, with six more Venezuelan skins available, I find that they are paler below on an average than most Colombian skins, but so many of the latter are just as pale that no formal separation is desirable or advisable. Consequently I do not recognize *aspersa* even as a subspecies, but I refer all our specimens to a single somewhat variable species, peculiar to the Subtropical Zone of Colombia and the coast range of Venezuela. The differential characters of this form have been succinctly defined by Hellmayr (Proceedings Zoological Society of London, 1911, 1197).

MONASA M. MORPHÆUS AND M. M. PERUANA.

The typical race is represented in our collection by twenty-seven specimens: Benevides, Santarem, Colonia do Mojuy, and Miritituba, Brazil. Ridgway's description of *Monasa rikeri* from Santarem was obviously based on a misunderstanding of the characters of *morphæus*, of which his name is a synonym. The character of the color of the malar apex is inconstant, as our series shows. Since Hellmayr (Field Museum Zoological Series, 12, 1929, 429) says that Pará specimens of *morphæus* agree with others from Bahia and Rio de Janeiro, the identity of our series listed above may be regarded as settled. Ten females measure as follows: wing, 118-132 (average, 127); tail, 112-128 (119.5); bill, 32-36 (34.4). I have selected females for measuring because they are generally larger than males, and because they are better represented in our series. It is quite possible that the minimum figures here quoted may actually refer to a wrongly sexed example.

Of the smaller race, *peruana*, we have thirty-five specimens from the middle and upper Amazon and the Rio Purús, as follows: Hyutanahan, Arimã, São Paulo de Olivença, Tonantins, Manacapurú, and Caviana, Brazil. Ten females measure: wing, 118-127 (123); tail, 106-114 (111);

bill, 30-33 (31.9). The only difference, so far as I can see, between *morphæus* and *peruana* is the smaller size of the latter, expressed in these measurements. I can find no difference in general coloration, in the extent of the white capistrum, or in the shape of the bill. If allowance is made for some of the examples measured which may have been wrongly sexed, my figures correspond very well with Ridgway's.

Griscom and Greenway (Bulletin Museum Comparative Zoölogy, 88, 1941, 192) refer all the specimens in our collection from the Rio Tapajóz to *morphæus* without apparent hesitation. So far as those from Santarem and the right bank in general are concerned, they are doubtless correct, but I find that birds from the left (west) bank of this river are practically inseparable from *peruana*, with which their measurements agree well. Ten females measure: wing, 116-125 (120); tail, 103-113 (110); bill, 30-33 (31.6). Our Rio Tapajóz specimens number twenty-two, from the following localities: Villa Braga, Itaituba, and Apacy.

I may here call attention to a minor error by Griscom and Greenway (*l. c.*, 193) in listing a specimen of *Monasa atra* from Obidos under *M. n. nigrifrons*.

THE GENUS NONNULA SCLATER.

Nonnula amaurocephala Chapman is represented in our collection by six topotypes from Manacapurú, Brazil. The sexes are alike so far as I can see. "Iris seal; feet plumbeous; maxilla black with lateral triangle of blue-gray from below the nostril halfway to the apex, also a line of the same color along edge of the gape; mandible blue-gray with black tip" (Klages).

Nonnula sclateri Hellmayr is represented by four specimens from Arimã, Rio Purús. This stands as the second locality for this species, heretofore known solely from the type-specimen from Humaythá, on the left bank of the Rio Madeira. Our specimens correspond closely to the original description and later remarks by Hellmayr.

On geographical grounds I strongly suspect that the *Nonnula* secured by Natterer at Borba, on the right bank of the Rio Madeira, and discussed by Hellmayr, *Novitates Zoologicae*, 17, 1910, 393, belongs to my lately described *N. rubecula simplex* (*Annals Carnegie Museum*, 25, 1937, 248) and not to *N. r. cineracea*. Of the latter we have six specimens from Hyutanahan (Rio Purús) and São Paulo de Olivença. The type of this form came from the Rio Javarri, a locality which ties in well with the two localities specified.

Our eleven specimens of *N. rubecula* from Tonantins, on the north bank of the Amazon, however, appear to be referable to the *Nonnula duidæ* of Chapman (Bulletin American Museum Natural History, 33, 1914, 195), which I would reduce to the rank of a subspecies. I am indebted to Mr. John T. Zimmer for a direct comparison of these specimens with the type of this form. Compared with *N. rubecula cineracea* of the upper Amazon (south bank), their coloration is brighter, and their color pattern is more sharply defined. The upperparts are sepia, with the pileum darker and more slaty (Chætura drab), and the eye-ring white; the rufous loreal spot and the black maxillary spot are well defined; the abdomen and under tail-coverts are white, laterally washed with buff; and the rest of the underparts are buckthorn brown (instead of tawny olive, as in *cineracea*).

This is a well-marked form, although the comparative differences have to be seen in order to be fully appreciated. The duller-colored *cineracea* has the colors more blended and is sordid-looking by comparison. *N. r. simplex* of the Rio Tapajóz is still more different.

We have also a single specimen (No. 77,912) of a *Nonnula* of the *rufipectus* group from Aveiros, on the east bank of the Rio Tapajóz—a locality far to the east of the known range of this species. This specimen was overlooked by Griscom and Greenway in listing our Amazonian material. Mr. John T. Zimmer has kindly compared it with the material in the American Museum and reports as follows:

"The *Nonnula* appears to be not fully adult and it is difficult to say which of its characters, if any, are due to this fact. However, it is more deeply rufous below than either *ruficapilla* or *rufipectus* and has the under tail-coverts more strongly ochraceous buff than in the extremes of *ruficapilla*. The flanks are more strongly cinnamomeous than in either of the forms mentioned. The tail is slightly darker than in *rufipectus* but much paler than in *ruficapillus*. The crown and forehead are paler than in *ruficapilla*, but darker than in *rufipectus*. The back of the head is less strongly rufous than in adults of either form, possibly because of immaturity. The hindneck is browner and less grayish, possibly for the same reason. The bill is the size of that of *rufipectus* but smaller than in *ruficapilla*. The yellow at the base of the bill is shown by some examples of the others. On the whole, if the characters here noticed are constant, your bird represents a new subspecies. There are no records from the Tapajóz region of any form, so far as I know. It is not *nattereri* (of which *pallida* is a synonym), since that is a much paler form."

I do not now venture to formally describe this supposed new form.